REMARKS/ARGUMENTS

Claims 1-6 are pending. By this Amendment, claim 1 is amended. Support for the amendments to claim 1 can be found, for example, at page 21 of the present specification, and in original claim 1. No new matter is added. In view of the foregoing amendments and following remarks, reconsideration and allowance are respectfully requested.

Rejection Under 35 U.S.C. §103

The Office Action rejects claims 1-6 under 35 U.S.C. §103(a) over U.S. Patent No. 6,338,763 to Hashimura et al. ("Hashimura"). Applicants respectfully traverse the rejection.

Claim 1 recites "[a] steel wire for high-strength spring having superior workability, the steel wire having tempered martensite, the steel wire comprising by mass: C: 0.53 to 0.68%; Si: 1.2 to 2.5%; Mn: 0.2 to 1.5%; Cr: 1.4 to 2.5%; Al: 0.05% or less, excluding 0%; at least one selected from the group consisting of Ni: 0.4% or less, excluding 0%; V: 0.4% or less, excluding 0%; Mo: 0.05 to 0.5%; and Nb: 0.05 to 0.5%; and remainder essentially consisting of Fe and inevitable impurities, wherein the prior austenite grain size number is 11.0 or larger, and a ratio ($\sigma_{0.2}/\sigma_B$) of 0.2% proof stress ($\sigma_{0.2}$) to tensile strength (σ_B) is 0.81 or lower" (emphasis added). Hashimura does not disclose or suggest such a wire.

The Office Action asserts that Hashimura discloses a steel wire in which a ratio ($\sigma_{0.2}/\sigma_B$) of 0.2% proof stress ($\sigma_{0.2}$) to tensile strength (σ_B) is not less than 0.8 and not greater than 0.9. *See* Office Action, page 3. That Office Action further asserts that this disclosed ratio overlaps the ratio recited in claim 1. *See* Office action, page 3. Notwithstanding this assertion, Hashimoto would not have rendered obvious claim 1.

As correctly pointed out in the Office Action, Hashimoto does include a general indication that the disclosed steel should have a yield ratio of not less than 0.8 and not more than 0.9. *See* Hashimoto, column 7, lines 25 to 40. However, Hashimoto does not disclose,

in a single embodiment, a steel wire that satisfies the compositional formula of claim 1 and also possesses a ratio ($\sigma_{0.2}/\ \sigma_B$) of 0.2% proof stress ($\sigma_{0.2}$) to tensile strength (σ_B) is 0.81 or lower. Rather, those exemplary wires in Hashimoto that overlap the compositional formula of claim 1 (e.g., Examples 10 and 22) have yield ratios that are well above the upper limit of 0.81 set forth in claim 1. Accordingly, Hashimoto does not specifically disclose a steel wire as recited in claim 1.

Also, Hashimoto does not suggest a steel wire as recited in claim 1. Hashimoto indicates that a sufficient sag resistance in a steel wire is not obtained when the yield ratio is less than 0.8. *See* Hashimoto, column 7, lines 33 to 35. Moreover, the only exemplary steel wires in Hashimoto that provide excellent sag resistance are those that have a yield ratio that is 0.82 or better. *See* Hashimoto, FIG. 3. Further, Hashimoto discloses that, in certain circumstances (an amount of residual austenite of less than 6%), the described steel wires can have yield ratios that exceed 0.9. *See* Hashimoto, column 7, lines 38 to 40. That is, Hashimoto generally teaches away from employing steel wires having a ratio ($\sigma_{0.2}/\ \sigma_B$) of 0.2% proof stress ($\sigma_{0.2}$) to tensile strength (σ_B) is 0.81 or lower.

The steel wire of claim 1 has a composition and structure that prevents breakage during coiling and provides improved cold workability by virtue of the steel wire having a ratio ($\sigma_{0.2}/\ \sigma_B$) of 0.2% proof stress ($\sigma_{0.2}$) to tensile strength (σ_B) is 0.81 or lower. *See, e.g.*, present specification, page 11, lines 3 to 13. The steel wire of Hashimoto, by contrast, obtains improved sag resistance by employing substantially higher yield ratios. That is, the steel wire of Hashimoto and the steel wire of claim 1 address different issues and, thus, are composed and structured differently. This difference in composition and structure is further evident from the austenite of the respective steel wires. Hashimura minimizes austenite content to 6% or less to curb formation of working-induced martensite to enhance workability. *See* Hashimoto, column 8, lines 4 to 6. In contrast, the steel wire of claim 1 has

a prior austenite grain size of 11.0 or larger to improve not only sag resistance, but also fatigue life. *See* present specification, page 10, lines 20 to 24, page 22, line 22 to page 23, line 1. Hashimoto's disclosure of controlling austenite content would not have led a skilled artisan to the prior austenite grain size recited in claim 1. Hashimoto fails to recognize the composition and structure of the steel wire of claim 1, or the benefits stemming therefrom.

As Hashimoto fails to disclose or suggest a steel wire satisfying the compositional formula of claim 1 in which a ratio ($\sigma_{0.2}/\ \sigma_B$) of 0.2% proof stress ($\sigma_{0.2}$) to tensile strength (σ_B) is 0.81 or lower, Hashimoto fails to disclose or suggest each and every feature of claim 1.

As explained, claim 1 would not have been rendered obvious by Hashimura. Claims 2-6 depend from claim 1 and, thus, also would not have been rendered obvious by Hashimura. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

Double Patenting

The Office Action provisionally rejects claims 1 and 2 under the judicially created doctrine of obviousness-type double patenting over claims 1-4 of U.S. Patent Application No. 10/550,019. Applicants respectfully request the rejection be held in abeyance until the 019 application is allowed or the present application is otherwise in condition for allowance.

Conclusion

For the foregoing reasons, Applicants submit that claims 1-6 are in condition for allowance. Prompt reconsideration and allowance are respectfully requested.

Respectfully submitted,

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